

Water Quality Use-Impairment Problem Identification

Aquatic Life Toxicity

Measure Toxicity in Runoff Water at Point at Which Runoff Enters
Receiving Water and in Waterbody in Which Mixing Occurs

If Toxicity Found, Determine if of Sufficient Magnitude and Duration
in Receiving Waters to Require Control

Conduct Runoff-Water Discharge-Plume Toxicity Studies
Determine Areal Extent and Duration of Persistence of Toxicity

Use Ambient-Water Toxicity Test
Larval Fish, Shellfish
Assess Death, Abnormal Growth and Reproduction

If Significant Toxicity Found:
Determine Cause through TIE Studies
Trace Toxicity to Source

Development and Implementation of Evaluation Monitoring for Stormwater Runoff Water Quality Impact Assessment and Management

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Executive Summary

This report covers the development and application of Evaluation Monitoring (EM) to highway and urban area street stormwater runoff water quality impact assessment and management. A discussion is presented on the need for an alternative approach to the conventional approach of evaluating the water quality impacts of highway and urban area stormwater runoff associated constituents on receiving water quality. Information is presented on the background to the development and application of site-specific studies (EM) that can be conducted on the receiving waters for stormwater runoff that identify real water quality use impairments in these waters that are caused by chemical constituents and/or pathogenic organism indicators in the stormwater runoff.

It is widely recognized that conventional stormwater runoff water quality monitoring provides little in the way of useful information that can be used to evaluate the impact of stormwater runoff on the beneficial uses of the receiving waters for the runoff. The Evaluation Monitoring program is designed to replace the conventional "water quality" monitoring programs that are used for measuring the chemical constituent concentrations in highway and urban area street stormwater runoff. The results of the EM program provides a technically valid, cost effective basis for water quality best management practice (BMP) development that replaces the conventional approach that is used to develop stormwater runoff water quality BMPs. The conventional BMP development approach assumes that detention basins, grassy swales, various types of filters, etc. are effective BMPs for controlling real water quality use impairments due to heavy metals, organics and other constituents in highway and urban area stormwater runoff. However, it is now well known that particulate forms of heavy metals and other constituents that are removed in conventional stormwater runoff BMPs do not adversely impact the beneficial uses of the receiving waters for the runoff. The particulate forms of heavy metals and other constituents are in non-toxic, non-available forms. Therefore, their removal in a detention basin or filter will not be of benefit to the beneficial uses of the receiving waters for the stormwater runoff.

Basically, the EM program shifts the funds that are used for end-of-the-pipe runoff monitoring to site-specific, highly directed studies designed to find real water quality use impairments of the receiving waters for the stormwater runoff. When such use impairments are found that are due to highway and/or urban area street runoff, then site-specific BMPs are developed that control the

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